Determination of Public Land (Rangeland) Health for 65049 CLEMMONS AND ERDMANN

The Record of Decision (ROD) for the New Mexico Standards for Public Land Health and Guidelines for Livestock Grazing Management (dated January 2001) adopted three Standards for Public Land Health. These are (1) Upland Sites Standard, (2) Biotic Communities, Including Native, Threatened, Endangered, and Special Status Species Standard and (3) Riparian Sites Standard.

The ROD also established a process for the BLM Field Offices for the implementation. Through a public participation process, the Roswell Field Office developed and adopted indicators to use in conjunction with existing monitoring data to assess these standards.

Field assessment worksheets and other available data that evaluate the local indicators were completed for this allotment. While habitat parameters may meet the Biotic standard, the habitat requirements for Special Status Species (lesser prairie chicken and sanddune lizard) habitat are a concern. Factors such as the mesquite encroachment in some areas and the low composition of the tall grass species required for nesting success must continue to be addressed to improve the existing habitat and prevent lost of habitat from fragmentation.

Based on the assessments, it is my determination that the public land within Clemmons & Erdmann allotment #65049 meets the Upland Sites standard and (2) Biotic Communities, including Native, Threatened, Endangered, and Special Status Species standard. There are no public land Riparian areas on this allotment, therefore this standard was not addressed.

/s/ T. R. Kreager	09/28/2005
Assistant Field Manager	Date

Standards of Public Land Health
Evaluation of 65049 CLEMMONS AND ERDMANN Allotment
[06/06/2005]

The Roswell Field Office conducted rangeland health assessments at two (2) study sites within the Clemmons and Erdmann allotment 65049. The assessments looked at the Soil/Site Stability, Hydrologic Function and Biotic Integrity indicators within the vicinity of each study site. Existing monitoring data was incorporated into and in support of the field assessment. The summary of each assessment is attached and shown in the following table.

Study Area or Assessment Area	UPLAND			BIOTIC			RIPARIAN		
	Meets	Monitor an Indicator	Does Not Meet	Meets	Monitor an Indicator	Does Not Meet	Meets	Monitor an Indicator	Does Not Meet
65049-MIDDLE SAND-D020	X	*		X	*		N/A		
65049-WEST SAND-D019	X			X	*		N/A		

Twenty-two (22) indicators for Rangeland Health were evaluated for public land on Clemmons & Erdmann allotment #65049. Ten (10) of these assessed soil site stability, 11 hydrologic function and 13 biotic integrity. These qualitative assessments in conjunction with previous data collected on two study locations within this allotment were utilized to make rangeland health determinations. Quantitative evaluations are performed by the Roswell Field Office, which include some or all of the following: ground and vegetative cover and composition, production, frequency and ecological condition. These collections which were initiated in the late 1970's/early 1980's, are scheduled and conducted approximately every 5 years.

Middle Sand Pasture, one of the study sites is a CP-2 Sand Hills ecological site. The acreage is 3,132 or 1,268 hectares on a Roswell-Jalmar fine sands, hilly that occurs on high terraces in the eastern part of the survey area. The elevation is 3,900 ft/1,182 m to 4,100 ft/1,242 m. Yearling cattle were congregated at the dirt tanks. These tanks were filled with runoff from recent storm events. This site was minimally impacted by this livestock however. Some shrubs on site appeared to be hedged. The small branches and twigs supply browse for mule deer and pronghorn (Antilocapra americana). Pronghorn bucks were observed along the two-track to the study area. The majority of indicators assessed rated Slight to Moderate with some deviations in the Moderate range. These are pedestals and/or terracettes, bareground, wind-scoured blowouts and/or deposition areas, soil surface resistance to erosion and physical crusts. Threeawn (Aristida spp.) and

RFOs Upland and Biotic Standard Assessment Summary Worksheet			
SITE 65049-MIDDLE SAND-D020			
Legal Land Desc	NWNE 17 0090S 0310E Meridian 23	Acreage	3132
Ecosite	070BY061NM SAND HILLS CP-2	Photo Taken	Y
Watershed	13060007050 WHITE LAKES		
Observers	NAVARRO/JAQUEZ	Observation Date	08/03/2005
County Soil Survey	NM644 CHAVES NORTH	Soil Var/Taxad	
Soil Map Unit	RPD	Soil Taxon Name	ROSWELL
Texture Class	NM644 FS	Soil Phase	ROSWELL-JALMAR
Texture Modifier	NM644 FINE SANDS,HILLY		
Observed Avg Annual Precipitation		Observed Avg Growing Season Precipitation	
NOAA Annual Precipitation	11.51	NOAA Growing Season Precipitation	9.93
NOAA Avg Annual Precipitation	12.99	NOAA Avg Growing Season Precipitation	11.42
Disturbances and Animal Use:	Yearlings are utilizing this pasture, but are holding to the water and trailing along the fenceline for the most part. The two-track roads are well traveled and are gullying in some places where traffic has crossed during the last wet period. Pronghorn or mule deer are hedging the half-shrub and forb components.		

Part 2. Attributes and Indicators

		Departure from Ecological Site Description/Ecological Reference Areas				
Attribute	Indicators	Extreme	Moderate to Extreme	Moderate	Slight to Moderate	None to Slight
S H	Rills				X	
Comments:						

S H	Water Flow Patterns				X	
Comments:						
S H	Pedestals and/or Terracettes			X		
Comments:	Pedestals on threeawn and bluestem. A few terracettes were observed.					
S H	Bare Ground			X		
Comments:	Current estimate is 50%. Slightly exceeds the long-term average.					
S H	Gullies				X	
Comments:						
S	Wind-scoured, Blowouts, and/or Deposition Areas			X		
Comments:	Occasionally present.					
H	Litter Movement				X	
Comments:	Some litter displacement is evident.					
S H B	Soil Surface Resistance to Erosion			X		
Comments:						
S H B	Soil Surface Loss or Degradation				X	
Comments:						
H	Plant Community Composition and Distribution Relative to Infiltration and Runoff				X	
Comments:						
S H B	Compaction Layer					X
Comments:						
B	Functional/Structural Groups				X	
Comments:	Some reduction in bluestems.					
B	Plant Mortality/Decadence					X
Comments:						
H B	Litter Amount					X
Comments:	Current estimate is 40%.					
B	Annual Production				X	
Comments:	800 lbs/ac or kg/ha is the current estimate.					
B	Invasive Plants					X
Comments:	Rarely present on site.					

B	Reproductive Capability of Perennial Plants				X	
Comments:						
S	Physical/Chemical/Biological Crusts			X		
Comments:	A very weak physical crust exists.					
B	Wildlife Habitat			X		
Comments:	The proportion of shinnery to bluestem is approximately 80-20. Forbs and half-shrubs are in abundance and appear to be hedged. Pronghorn were observed in this pasture.					
B	Wildlife Populations			X		
Comments:						
B	Special Status Species Habitat			X		
Comments:	The proportion of shinnery to bluestem is approximately 80-20.					
B	Special Status Species Populations			X		
Comments:						

Part 3. Summary

A. Indicator Summary - Each of the indicators are associated with one or more of the attributes below. An indicator is placed in a category (columns) above and summed for each of the Standard Attributes.

Standard Attribute		Extreme	Moderate to Extreme	Moderate	Slight to Moderate	None to Slight
S	Soil	0	0	5	4	1
H	Hydrologic	0	0	3	6	2
B	Biotic	0	0	5	4	4

B. Attribute Summary. In this table, the Extreme and Extreme to Moderate columns in the table above are merged for the *Does not Meet* column, Moderate becomes *May Need More Info*, and Slight to Moderate and None to Slight merge to form the *Meets* columns. Values from the table are summarized below. Space is provided for rationale of the determination. This space should most certainly be used when the determination by the ID team conflicts with the summarized values. Provide the sources of information that lead to the determination. X out the appropriate box for each attribute to denote final agreed upon determination by the ID team.

Attribute	Rationale	Does Not Meet	May Need More Info	Meets
Soil	Soil attributes show some degradation. Organic matter is lacking in the interspaces. This site however is recovering; although there are yearlings in this pasture, they are holding tight to the water and utilizing the outskirts straddling the fenceline.	0	5	5
Hydrologic		0	3	8
Biotic	Some biotic indicators show moderate departure but remain sufficient. Continued evaluation to ensure the biotics remain at an acceptable level is recommended. Special status species (LPC) habitat is a concern.	0	5	8

Site Notes: This pasture is currently grazed by yearlings. This livestock however is holding close to the dirt tanks which have filled with standing water due to isolated thunderstorms over the last couple of weeks. Vegetative growth is evident everywhere, but the reproductive growth has yet to manifest itself.

There is a generous forb component in the form of aster, buckwheat, mentzelia and half-shrubs which appear to be hedged by either mule deer or antelope. Pronghorn were observed in this pasture along with jackrabbits and some raptors like burrowing owls, kestrels, and hawks.

Grasses on site observed but in reduced amounts were hairy grama, sand and little bluestem, panicum and dropseed. Threeawn is abundant and prevailing.

RFOs Upland and Biotic Standard Assessment Summary Worksheet			
SITE 65049-WEST SAND-D019			
Legal Land Desc	NWNE 24 0090S 0300E Meridian 23	Acreage	2015
Ecosite	070BY061NM SAND HILLS CP-2	Photo Taken	Y
Watershed	13060007050 WHITE LAKES		
Observers	NAVARRO/JAQUEZ	Observation Date	08/03/2005
County Soil Survey	NM644 CHAVES NORTH	Soil Var/Taxad	
Soil Map Unit	RPD	Soil Taxon Name	ROSWELL
Texture Class	NM644 FS	Soil Phase	ROSWELL-JALMAR
Texture Modifier	NM644 FINE SANDS,HILLY		
Observed Avg Annual Precipitation		Observed Avg Growing Season Precipitation	
NOAA Annual Precipitation	11.51	NOAA Growing Season Precipitation	9.93
NOAA Avg Annual Precipitation	12.99	NOAA Avg Growing Season Precipitation	11.42
Disturbances and Animal Use:	No disturbances exist at this time.		

Part 2. Attributes and Indicators						
		Departure from Ecological Site Description/Ecological Reference Areas				
Attribute	Indicators	Extreme	Moderate to Extreme	Moderate	Slight to Moderate	None to Slight
S H	Rills					X
Comments:						
S H	Water Flow Patterns					X
Comments:						
S H	Pedestals and/or Terracettes				X	
Comments:						

S H	Bare Ground				X	
Comments:	40% is the current estimate.					
S H	Gullies					X
Comments:						
S	Wind-scoured, Blowouts, and/or Deposition Areas			X		
Comments:	Blow-outs occasionally present.					
H	Litter Movement				X	
Comments:						
S H B	Soil Surface Resistance to Erosion					X
Comments:	A good mulch layer exists with organic matter in the interspaces.					
S H B	Soil Surface Loss or Degradation				X	
Comments:						
H	Plant Community Composition and Distribution Relative to Infiltration and Runoff					X
Comments:						
S H B	Compaction Layer					X
Comments:						
B	Functional/Structural Groups				X	
Comments:	Only slight departures exist.					
B	Plant Mortality/Decadence					X
Comments:						
H B	Litter Amount				X	
Comments:	Falls within the range at 40% estimate.					
B	Annual Production				X	
Comments:	800 lbs/ac or kg/ha is the current estimate.					
B	Invasive Plants					X
Comments:						
B	Reproductive Capability of Perennial Plants				X	
Comments:	Slightly limited.					
S	Physical/Chemical/Biological Crusts					X

Comments:						
B	Wildlife Habitat			X		
Comments:	The lack of shinnery is of concern.					
B	Wildlife Populations			X		
Comments:						
B	Special Status Species Habitat			X		
Comments:	Prairie chicken leks were recorded at the far reaches of this pasture. The immediate vicinity does exhibit reduction in shinnery.					
B	Special Status Species Populations			X		
Comments:						

Part 3. Summary

A. Indicator Summary - Each of the indicators are associated with one or more of the attributes below. An indicator is placed in a category (columns) above and summed for each of the Standard Attributes.

Standard Attribute		Extreme	Moderate to Extreme	Moderate	Slight to Moderate	None to Slight
S	Soil	0	0	1	3	6
H	Hydrologic	0	0	0	5	6
B	Biotic	0	0	4	5	4

B. Attribute Summary. In this table, the Extreme and Extreme to Moderate columns in the table above are merged for the *Does not Meet* column, Moderate becomes *May Need More Info*, and Slight to Moderate and None to Slight merge to form the *Meets* columns. Values from the table are summarized below. Space is provided for rationale of the determination. This space should most certainly be used when the determination by the ID team conflicts with the summarized values. Provide the sources of information that lead to the determination. X out the appropriate box for each attribute to denote final agreed upon determination by the ID team.

Attribute	Rationale	Does Not Meet	May Need More Info	Meets
Soil		0	1	9

Hydrologic		0	0	11
Biotic	Some biotic indicators show moderate departure but remain sufficient. Continued evaluation to ensure the biotics remain at an acceptable level is recommended. Special status species (LPC) habitat is a concern.	0	4	9

Site Notes: This site is in good to excellent condition. The forb and grass components are plentiful with little bluestem, hairy grama, buckwheat and other annual forbs present. The shinnery oak is reduced however and can only be found on the dunes at the far reaches.

90 yearlings were observed in this pasture during the spring, but have been moved to the Middle Sand Pasture. These livestock straddled the fenceline however and rarely distributed towards the middle, holding close to the water sources as well.

Witness post was reset close to the trend plot.

bluestem (Andropogon spp.) were elevated above soil surface level with no root exposure. Occasional terracettes were present however. Bareground was estimated at 50-60 percent exceeding the Ecological Site Description by 15 to 20 percent. Wind-scoured blowouts are occasionally present especially on the windward side of dunal formations. The interspace soil ped sample melted rather rapidly using the soil site stability test. Under the canopy ped samples contained more organic matter and remained intact a few minutes longer. As this soil, hydrologic and biotic attribute suggests, physical crusting is weak and is only a minor interspace component. Shinnery oak (Quercus havardii) is down from previous years due to a past herbicidal treatment. Forbs are abundant on site with hairy grama (Bouteloua hirsuta), little bluestem (Schizachyrium scoparium) and panicum (Panicum spp.) in moderate amounts. All other indicators rate None to Slight with normal ranges of variability.

West Sand Pasture, the remaining CP-2 Sand Hills ecological site is also a Roswell-Jalmar soil phase. This study site is on 2,015 acres/816 hectares. No livestock were present as the grazing scheme rotated the yearlings to Middle Sand on this pasture in the spring. Shinnery oak, like the previous pasture is also in reduced amounts due to past treatment. The majority of indicators assessed rated None to Slight and Slight to Moderate. The indicator of concern is the wind-scoured blowouts and/or depositional areas. Occasional blowout areas were observed at the far reaches of this pasture to the north, east and south. The immediate vicinity displays good to excellent ecological condition with grass, shrub and forb components in adequate proportions. Annual production is estimated at 1000 lbs/ac or kg/ha. Forbs are abundant along with shrub species except for shinnery oak, which is adequate. Hairy grama, little bluestem and threeawn are the dominate grasses. The site in it's entirety indicates only slight departures form normal ranges of variability.

Hydrology-

Middle Sand pasture - The pedestals and/or terracette indicator rated as moderate. The recent dry conditions in combination with wind and water erosion has possibly decreased the amount of plant cover and possibly decreased infiltration into the soils which may have increased the amount of pedestaling of grasses. Reduced plant comer is also evidenced by the existance of a few terracettes. The bare ground indicator rated as moderate. The amount of bare ground has possibly increased due to recent dry conditions and also wind and water erosion processes. The wind scoured, blowouts, and or deposition area indicator rated out as moderate. The decrease in the strength of the physical soil crusts and or the absence of soil crusts, wind velocity, surface dryness, surface roughness, and the decreased amount of surface plant cover has possibly increased the amount of wind-scoured, blowouts and deposition areas in the area which are occansionally present in the area. Soil surface resistance to erosion rated in the moderate category. Organic matter is lacking on this site. The physical/biological crust indicator rated as moderate. There was a lack of physical soil crusts in the area and there was a very weak physical crust. All other indicators rated as none to slight or slight to moderate which shows a healthy ecological condition in relation to those indicators.

West Sand pasture - The wind scoured, blowouts, and or deposition area indicator rated out as moderate. The decrease in the strength of the physical soil crusts and or the absence of soil crusts, wind velocity, surface dryness, surface roughness, and the decreased amount of surface plant cover has possibly increased the amount of wind-scoured, blowouts and deposition areas in the area. All other indicators rated as none to slight or slight to moderate which shows a healthy ecological condition in relation to those indicators.

Wildlife -

Evaluation of the integrity of biotic community considered several indicators as attribute indices for the area of interest. Biotic indicators are interrelated with several other indicators, including soil/site stability, hydrologic function, and vegetation. Several indicators are singularly biotic and address the vegetative aspect of the ecological site description, such as functional/structural groups and plant mortality & decadence.

In addition to the standard worksheet biotic factors, four specific wildlife indicators and descriptors are included in this evaluation. A unique assemblage of terrestrial species and avifauna can be expected to use the Mescalero Sands ecosystem. Of significance are the sand dune lizard (Sceloporus arenicolous) and lesser prairie chicken (Tympanuchus pallidicinctus) known only to occur within this ecosystem. The vegetation community of interest is the shinnery oak-tall grass type only found in this portion of the Field Office area. Key habitat components include sand bluestem, shinnery oak, sand dune lizard habitat features (dune blowouts), and lesser prairie chicken habitat features (booming grounds & nesting areas). The amount, condition and juxtaposition of these habitat features are used as habitat indicators for this assessment. The assessment begins by determining if the site is within "Core Areas" for lesser prairie chicken (LPC) and sand dune lizard (SDL). Other important wildlife species and their habitats, such as desert mule deer (Odocoileus hemionus), pronghorn, a variety of game and non-game species, are also considered in the assessment.

This is a small allotment with two pastures. Study sites have been established in both pastures. The entire allotment falls within the LPC and SDL Core Area. This overall evaluation will focus on LPC and SDL habitat with anecdotal commentary regarding the habitat for other wildlife species.

Nine historical lesser prairie chicken leks have been documented in the southern portion of the allotment in both pastures. Most of the leks have been inactive for up to ten years while one has remained active. Chemical treatments have been applied in both pastures for brush/shinnery oak control in the past. This practice may have resulted in lasting negative effects on the habitat for these sensitive species, albeit Robel studies indicate that improving conditions are occurring in the shinnery oak / tall grass community. The active lek is located in West Sand pasture along with some potential habitat for sand dune lizard. Middle Sand pasture also has potential for both of these sensitive species but their presence has not been noted.

A moderate habitat indicator rating for both pastures is assigned for LPC habitat due to decreased abundance of tall grass species such as sand bluestem, and shrubs such as shinnery oak and sand sage. The invasion by mesquite and yucca also lends to this rating. LPC lek activity in the allotment and adjacent allotments has demonstrated a slight upward trend for the last ten years. Therefore, a LPC population indicator rating of moderate is appropriate.

Blowouts are desirable and are evident in both pastures for SDL habitat; however it is not known if the lizard is colonizing them at present. At this level of assessment, an SDL habitat rating of moderate is also appropriate until such time as detailed surveys of the species are conducted. Since SDL population status is unknown at this time a moderate rating is appropriate as well.

Mule deer, pronghorn, scaled quail (Callipepla squamata), mockingbirds (Mimus polyglottos), turkey vultures (Cathartes aura), and jackrabbits (Lepus californicus) have been observed in this allotment, as have various passerine birds, other small mammals, and reptilian species. Wildlife observations in this allotment indicate that they reside in it but their population status is unknown. In lieu of information indicating differently a moderate rating has been assigned for their habitats and populations. Wildlife population data for most species do not exist for this allotment therefore an assessment as to the status of the various species is not possible at this time.

In the professional opinion of the Assessment Team, public land within Clemmons & Erdmann allotment #65049, meets Upland and Biotic standards. There are no Riparian issues present, therefore this standard was not addressed. See site notes and recommendations for further information regarding this assessment.

Recommendations:

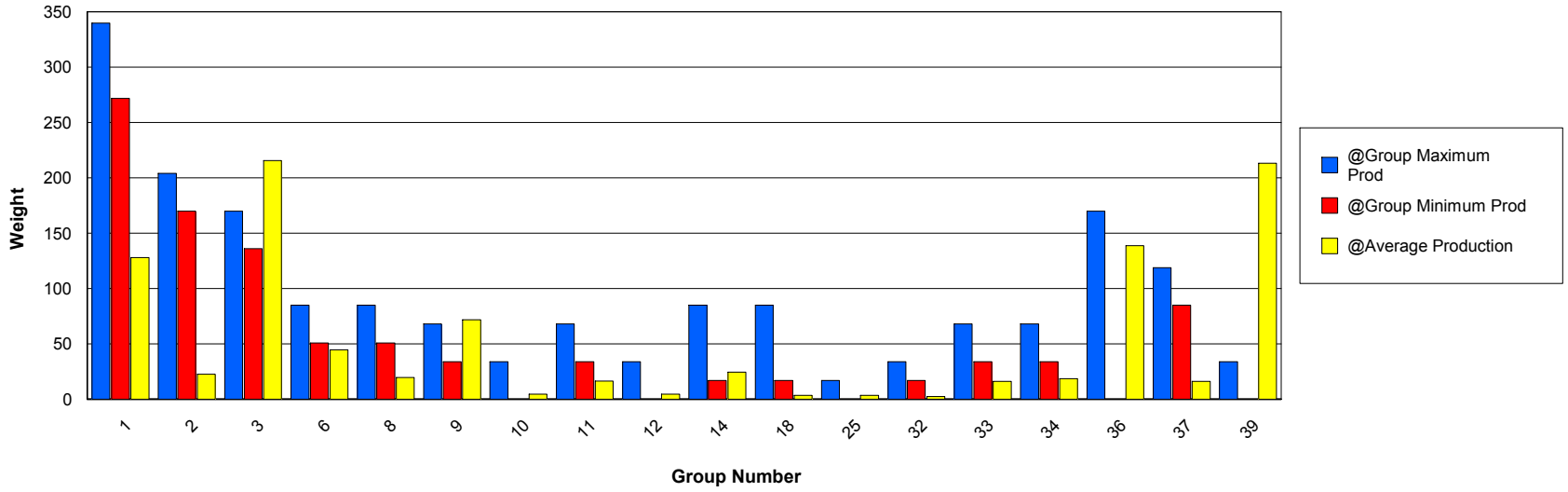
Functional / Structural Groups

Report Parameters

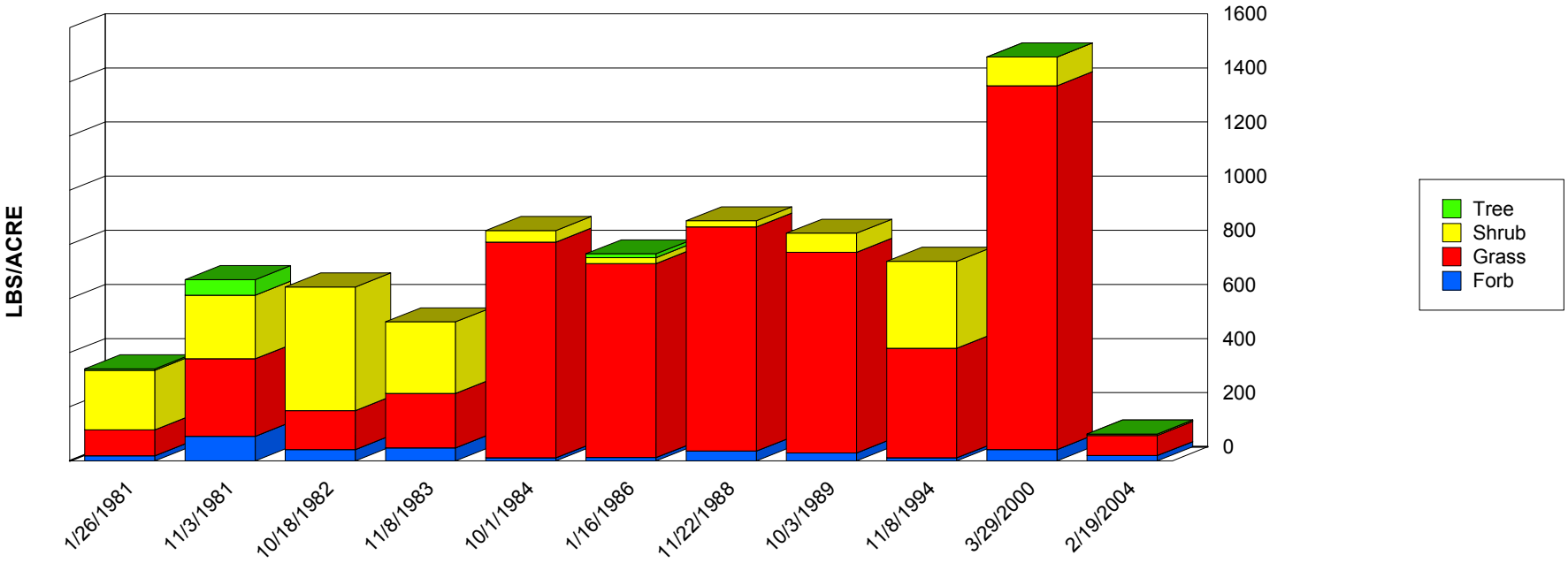
SITE NAME LIKE	65049-MIDDLE SAND-D020
ON/AFTER	10/01/1980
ON/BEFORE	09/30/2005
MIN LBS TO GRAPH	2
SELECTED ECOSITE	070BY061NM

Group	Plant Type	Species	Low Wt Allowed	High Wt Allowed	Minimum	Maximum	Average	STDEV
1	Grass	ANHA	272	340	6.00	408.50	127.94	125.99
2	Grass	SPCR	170	204	1.27	66.13	22.64	21.22
3	Grass	ANSC2	136	170	20.90	531.20	215.72	183.03
6	Grass	PASPA2	51	85	3.18	39.00	21.09	17.91
6	Grass	PAST6	51	85	0.00	90.16	23.74	26.41
8	Grass	BOHI2	51	85	0.63	68.16	19.62	22.52
9	Grass	ARIST	34	68	0.00	148.80	71.92	45.84
10	Grass	CEPA7	0	34	0.00	12.64	4.66	5.22
11	Grass	LECO	34	68	0.63	46.98	16.39	13.48
12	Grass	MUSQ	0	34	1.84	7.60	4.72	2.88
14	Grass	EROX	17	85	0.00	64.35	24.51	20.89
18	Grass	BOCU	17	85	0.67	7.10	3.47	2.73
25	Grass	CAREX	0	17	0.00	10.00	3.61	3.46
32	Forb	AMPS	17	34	1.43	3.67	2.55	1.12
33	Forb	AAFF	34	68	2.00	36.37	16.33	13.01
34	Forb	CRJA2	34	68	1.00	8.75	4.87	3.87
34	Forb	LESQU	34	68	0.00	2.00	0.67	0.94
34	Forb	MELE2	34	68	0.00	6.00	1.50	2.60
34	Forb	PPFF	34	68	0.75	19.20	9.65	7.55
34	Forb	SENEC	34	68	0.00	5.46	2.04	2.43
36	Shrub	QUHA3	0	170	0.00	456.12	138.79	151.04
37	Shrub	ARFI2	85	119	0.00	56.47	16.32	19.25
39	Shrub	YUCCA	0	34	31.00	312.00	171.50	140.50
39	Tree	YUEL	0	34	0.00	58.00	15.40	21.91
39	Shrub	YUGL	0	34	2.67	50.00	26.33	23.67

Group	Plant Type	Species	Low Wt Allowed	High Wt Allowed	Minimum	Maximum	Average	STDEV



Production Lbs/Acre Trends

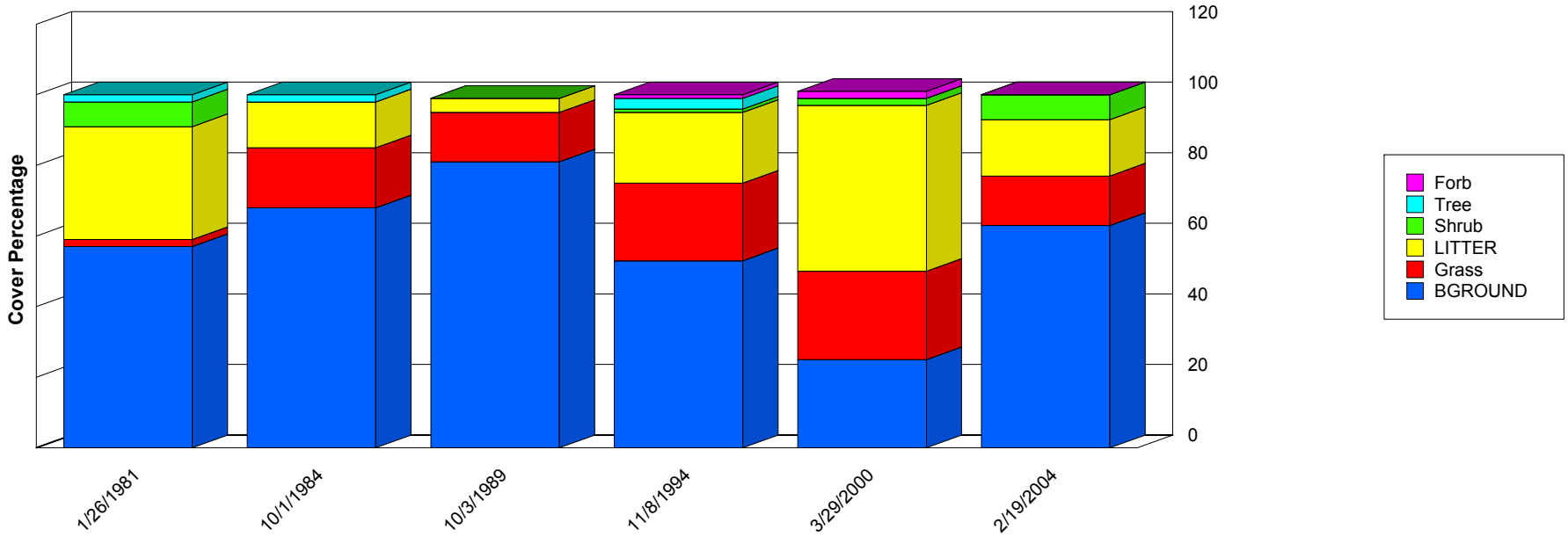


	1/26/1981	11/3/1981	10/18/1982	11/8/1983	10/1/1984	1/16/1986	11/22/1988	10/3/1989	11/8/1994	3/29/2000	2/19/2004
Forb	**19.20**	**90.54**	**41.54**	**47.88**	**11.00**	**12.00**	**36.00**	**29.00**	**11.00**	**41.83**	**19.50**
Grass	**95.51**	**286.60**	**144.48**	**201.40**	**797.13**	**716.96**	**828.10**	**742.00**	**405.00**	**1,344.23**	**74.45**
Shrub	**220.37**	**234.72**	**456.12**	**264.48**	**43.11**	**22.00**	**22.80**	**70.00**	**321.00**	**106.47**	**5.31**
Tree	**5.00**	**58.00**	**0.00**	**0.00**	**0.00**	**14.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**
Total	**340.09**	**669.86**	**642.14**	**513.76**	**851.23**	**764.96**	**886.90**	**841.00**	**737.00**	**1,492.53**	**99.25**

Report Parameters

SITE NAME LIKE	65049-MIDDLE SAND-D020
ON/AFTER	10/01/1980
ON/BEFORE	09/30/2005

Ground Cover Trends



	1/26/1981	10/1/1984	10/3/1989	11/8/1994	3/29/2000	2/19/2004
BGROUND	57.00	68.00	81.00	53.00	25.00	63.00
Forb	0.00	0.00	0.00	1.00	2.00	0.00
Grass	2.00	17.00	14.00	22.00	25.00	14.00
LITTER	32.00	13.00	4.00	20.00	47.00	16.00
Shrub	7.00	0.00	0.00	1.00	2.00	7.00
Tree	2.00	2.00	0.00	3.00	0.00	0.00
Total	100.00	100.00	99.00	100.00	101.00	100.00

Report Parameters

SITE NAME LIKE	65049-MIDDLE SAND-D020
ON/AFTER	10/01/1980
ON/BEFORE	09/30/2005

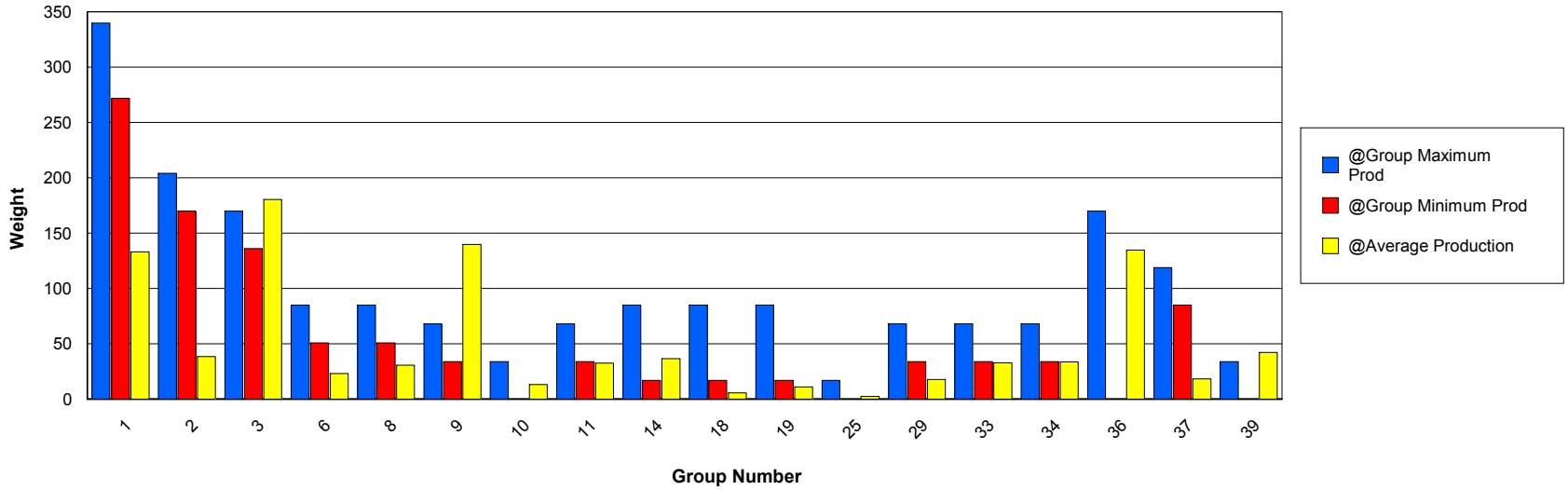
Functional / Structural Groups

Report Parameters

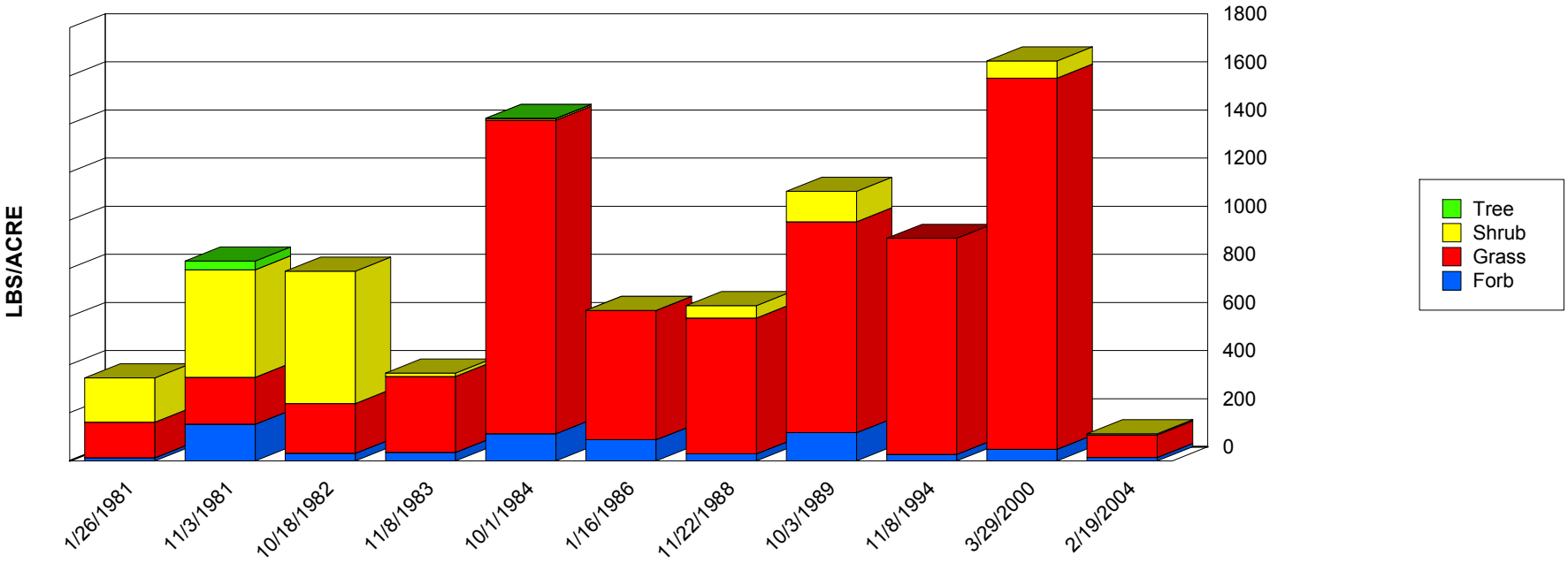
SITE NAME LIKE	65049-WEST SAND-D019
ON/AFTER	10/01/1980
ON/BEFORE	09/30/2005
MIN LBS TO GRAPH	2
SELECTED ECOSITE	070BY061NM

Group	Plant Type	Species	Low Wt Allowed	High Wt Allowed	Minimum	Maximum	Average	STDEV
1	Grass	ANHA	272	340	2.67	496.53	133.24	149.40
2	Grass	SPCR	170	204	4.67	134.00	38.43	36.55
3	Grass	ANSC2	136	170	1.26	684.80	180.51	203.51
6	Grass	PAST6	51	85	0.00	91.50	23.16	28.02
8	Grass	BOHI2	51	85	1.27	82.08	30.60	23.69
9	Grass	ARIST	34	68	0.00	253.00	139.77	67.95
10	Grass	CEPA7	0	34	0.00	35.00	13.34	11.80
11	Grass	LECO	34	68	6.33	92.47	32.67	23.74
14	Grass	EROX	17	85	0.00	136.80	36.63	44.80
18	Grass	BOCU	17	85	1.00	11.83	5.72	4.51
19	Grass	BOER4	17	85	0.00	22.10	11.05	11.05
25	Grass	CAREX	0	17	0.00	5.92	2.60	2.19
29	Forb	ERIOG	34	68	0.00	28.45	17.95	10.79
33	Forb	AAFF	34	68	0.00	95.00	30.62	32.17
33	Forb	PEPA2	34	68	0.00	6.80	2.27	3.21
34	Forb	CRJA2	34	68	10.32	10.39	10.35	0.03
34	Forb	LESQU	34	68	0.00	5.12	2.56	2.56
34	Forb	MELE2	34	68	0.00	40.80	13.60	19.23
34	Forb	PPFF	34	68	0.00	18.00	6.86	6.32
34	Forb	SENEC	34	68	0.00	0.85	0.43	0.43
36	Shrub	QUHA3	0	170	0.00	550.62	134.81	191.31
37	Shrub	ARFI2	85	119	0.55	30.00	18.43	12.82
39	Tree	YUEL	0	34	0.67	36.00	18.33	17.67
39	Shrub	YUGL	0	34	1.33	46.67	24.00	22.67

Group	Plant Type	Species	Low Wt Allowed	High Wt Allowed	Minimum	Maximum	Average	STDEV



Production Lbs/Acre Trends

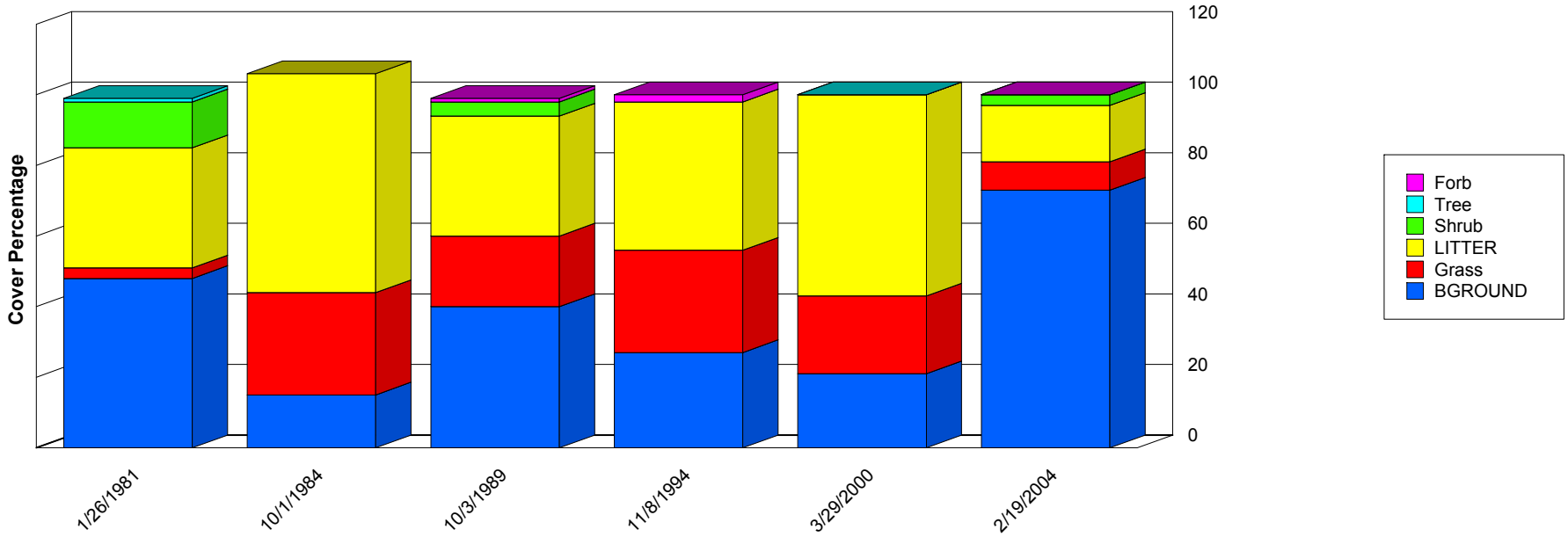


	1/26/1981	11/3/1981	10/18/1982	11/8/1983	10/1/1984	1/16/1986	11/22/1988	10/3/1989	11/8/1994	3/29/2000	2/19/2004
Forb	**13.37**	**151.84**	**31.12**	**35.44**	**112.33**	**87.60**	**28.80**	**117.00**	**27.00**	**47.93**	**14.22**
Grass	**147.65**	**195.84**	**206.88**	**315.26**	**1,303.29**	**537.92**	**564.60**	**877.00**	**898.00**	**1,542.69**	**93.75**
Shrub	**184.00**	**446.60**	**550.62**	**13.92**	**7.32**	**0.00**	**52.00**	**126.00**	**0.00**	**71.40**	**4.52**
Tree	**0.00**	**36.00**	**0.00**	**0.00**	**0.67**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**
Total	**345.03**	**830.28**	**788.62**	**364.62**	**1,423.61**	**625.52**	**645.40**	**1,120.00**	**925.00**	**1,662.02**	**112.49**

Report Parameters

SITE NAME LIKE	65049-WEST SAND-D019
ON/AFTER	10/01/1980
ON/BEFORE	09/30/2005

Ground Cover Trends



	1/26/1981	10/1/1984	10/3/1989	11/8/1994	3/29/2000	2/19/2004
BGROUND	48.00	15.00	40.00	27.00	21.00	73.00
Forb	0.00	0.00	1.00	2.00	0.00	0.00
Grass	3.00	29.00	20.00	29.00	22.00	8.00
LITTER	34.00	62.00	34.00	42.00	57.00	16.00
Shrub	13.00	0.00	4.00	0.00	0.00	3.00
Tree	1.00	0.00	0.00	0.00	0.00	0.00
Total	99.00	106.00	99.00	100.00	100.00	100.00

Report Parameters

SITE NAME LIKE	65049-WEST SAND-D019
ON/AFTER	10/01/1980
ON/BEFORE	09/30/2005

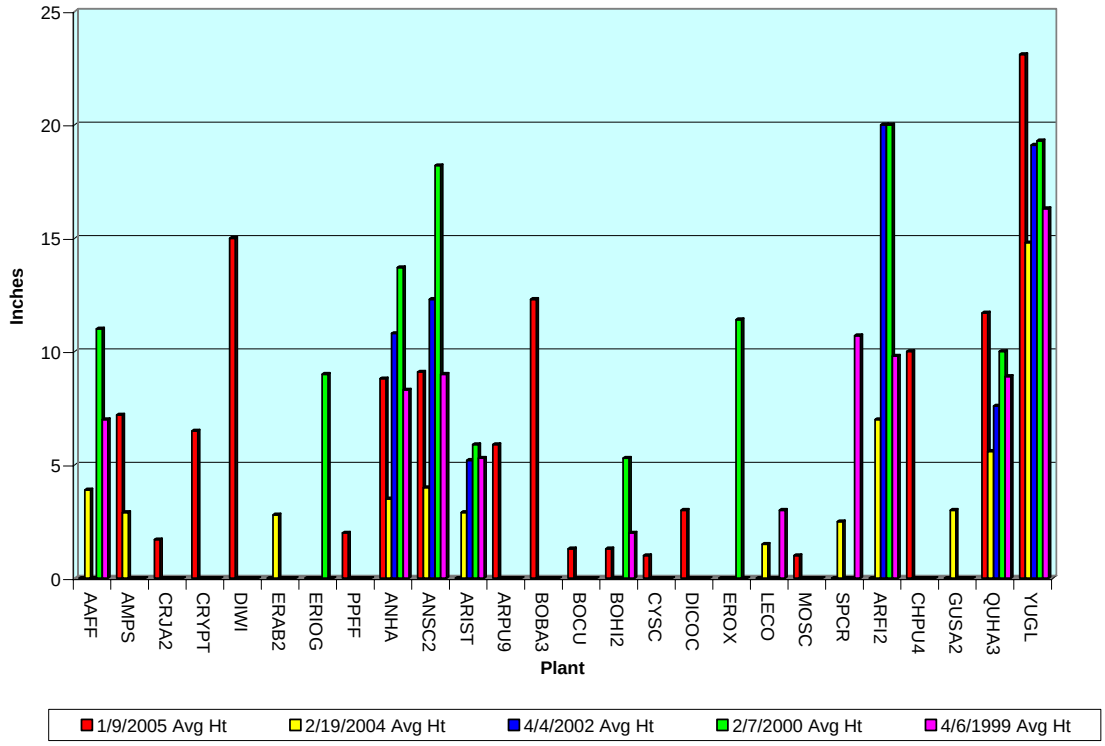
Robel Pole Summary over Time Report

Report Parameters
SITE NAME LIKE 65049-MIDDLE SAND-D020
ON/AFTER 10/01/1998
ON/BEFORE 09/30/2005

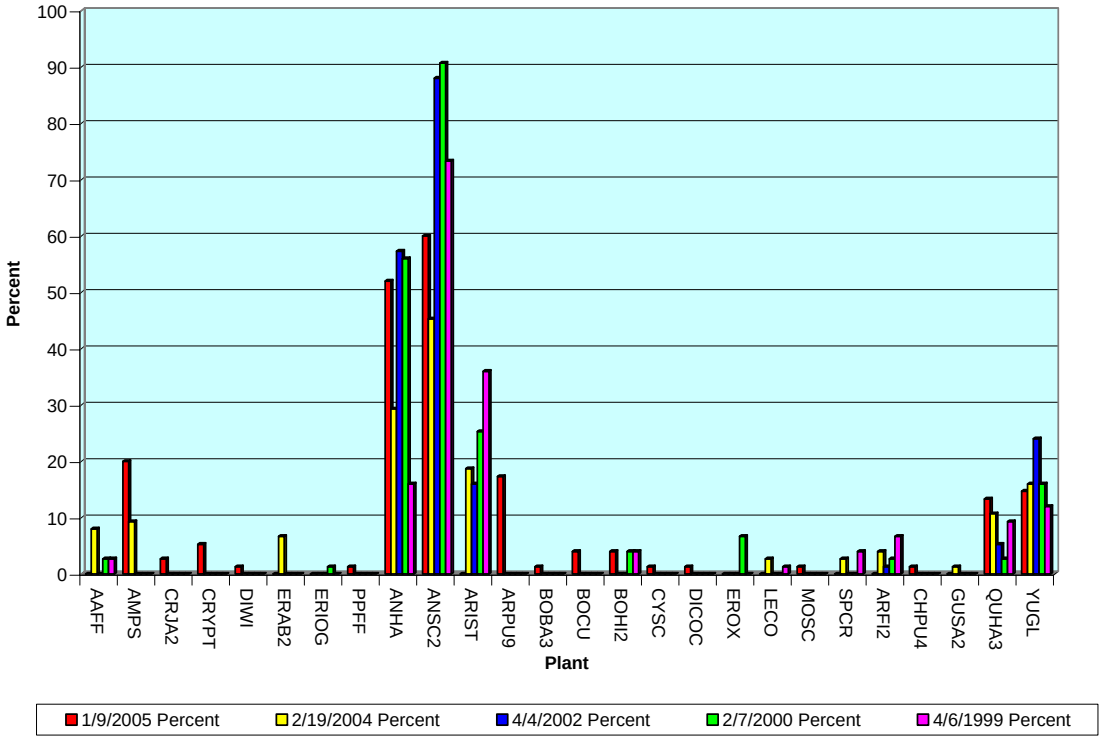
Primary Obstructions	**65049-MIDDLE SAND-D020**	**65049-MIDDLE SAND-D020**	**65049-MIDDLE SAND-D020**	**65049-MIDDLE SAND-D020**	**65049-MIDDLE SAND-D020**
	01/09/2005	**02/19/2004**	**04/04/2002**	**02/07/2000**	**04/06/1999**
Flag Stations	13	0	14	45	0
	% Hits	% Hits	% Hits	% Hits	% Hits
BGROUND	38.7 %	60.0 %	65.3 %	37.3 %	49.3 %
LITTER	30.7 %	21.3 %	17.3 %	18.7 %	22.7 %
ARFI2	0.0 %	1.3 %	0.0 %	0.0 %	1.3 %
QUHA3	1.3 %	0.0 %	0.0 %	0.0 %	0.0 %
YUGL	2.7 %	5.3 %	1.3 %	0.0 %	1.3 %
ANHA	9.3 %	8.0 %	4.0 %	14.7 %	1.3 %
ANSC2	13.3 %	1.3 %	6.7 %	20.0 %	12.0 %
ARIST	0.0 %	0.0 %	5.3 %	6.7 %	4.0 %
BOCU	2.7 %	0.0 %	0.0 %	0.0 %	0.0 %
BOGR2	0.0 %	0.0 %	0.0 %	0.0 %	2.7 %
BOHI2	0.0 %	0.0 %	0.0 %	2.7 %	0.0 %
LECO	0.0 %	1.3 %	0.0 %	0.0 %	0.0 %
SPCR	0.0 %	1.3 %	0.0 %	0.0 %	0.0 %
AAFF	0.0 %	0.0 %	0.0 %	0.0 %	5.3 %
CRJA2	1.3 %	0.0 %	0.0 %	0.0 %	0.0 %

Secondary Obstructions	65049-MIDDLE SAND-D020		65049-MIDDLE SAND-D020		65049-MIDDLE SAND-D020		65049-MIDDLE SAND-D020		65049-MIDDLE SAND-D020	
	01/09/2005		02/19/2004		04/04/2002		02/07/2000		04/06/1999	
	Percent	Avg Ht	Percent	Avg Ht	Percent	Avg Ht	Percent	Avg Ht	Percent	Avg Ht
AAFF	0.0	0.0	8.0	3.9	0.0	0.0	2.7	11.0	2.7	7.0
AMPS	20.0	7.2	9.3	2.9	0.0	0.0	0.0	0.0	0.0	0.0
ANHA	52.0	8.8	29.3	3.5	57.3	10.8	56.0	13.7	16.0	8.3
ANSC2	60.0	9.1	45.3	4.0	88.0	12.3	90.7	18.2	73.3	9.0
ARFI2	0.0	0.0	4.0	7.0	1.3	20.0	2.7	20.0	6.7	9.8
ARIST	0.0	0.0	18.7	2.9	16.0	5.2	25.3	5.9	36.0	5.3
ARPU9	17.3	5.9	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
BOBA3	1.3	12.3	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
BOCU	4.0	1.3	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
BOHI2	4.0	1.3	0.0	0.0	0.0	0.0	4.0	5.3	4.0	2.0
CHPU4	1.3	10.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
CRJA2	2.7	1.7	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
CRYPT	5.3	6.5	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
CYSC	1.3	1.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
DICOC	1.3	3.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
DIWI	1.3	15.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
ERAB2	0.0	0.0	6.7	2.8	0.0	0.0	0.0	0.0	0.0	0.0
ERIOG	0.0	0.0	0.0	0.0	0.0	0.0	1.3	9.0	0.0	0.0
EROX	0.0	0.0	0.0	0.0	0.0	0.0	6.7	11.4	0.0	0.0
GUSA2	0.0	0.0	1.3	3.0	0.0	0.0	0.0	0.0	0.0	0.0
LECO	0.0	0.0	2.7	1.5	0.0	0.0	0.0	0.0	1.3	3.0
MOSC	1.3	1.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
PPFF	1.3	2.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
QUHA3	13.3	11.7	10.7	5.6	5.3	7.6	2.7	10.0	9.3	8.9
SPCR	0.0	0.0	2.7	2.5	0.0	0.0	0.0	0.0	4.0	10.7
YUGL	14.7	23.1	16.0	14.8	24.0	19.1	16.0	19.3	12.0	16.3

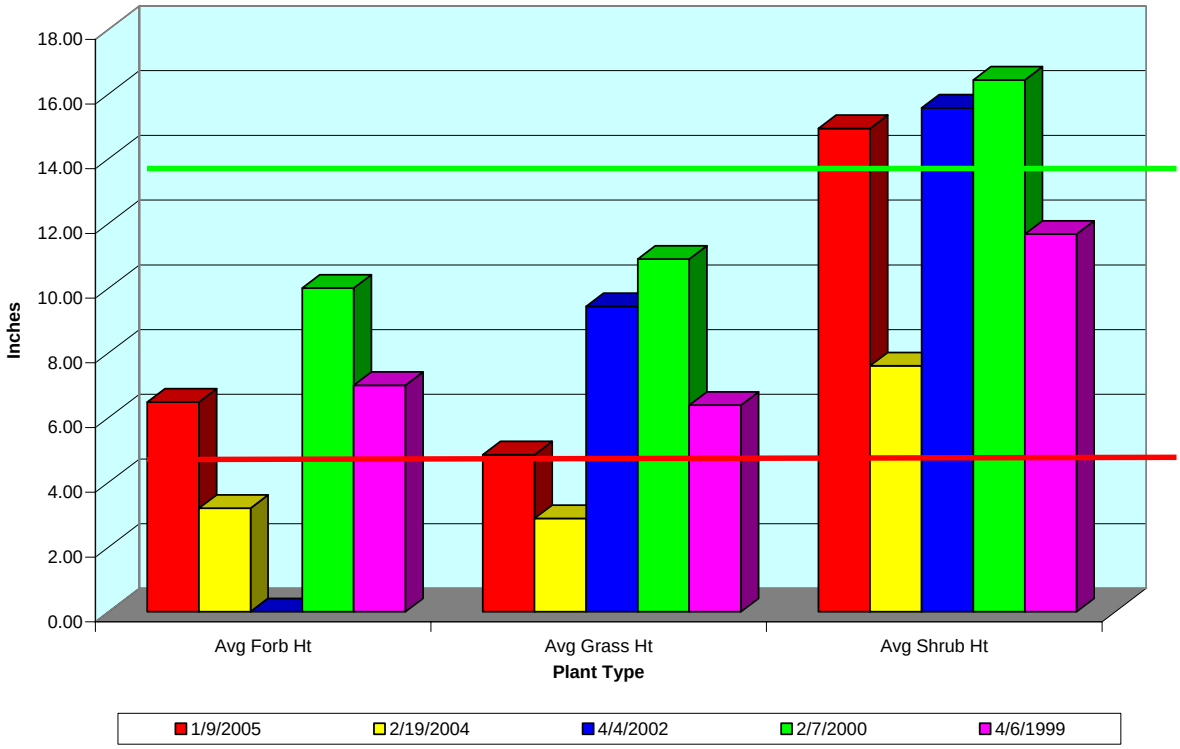
Average Visual Obstruction Height



Plant Composition



Plant Type Average Visual Obstruction Height



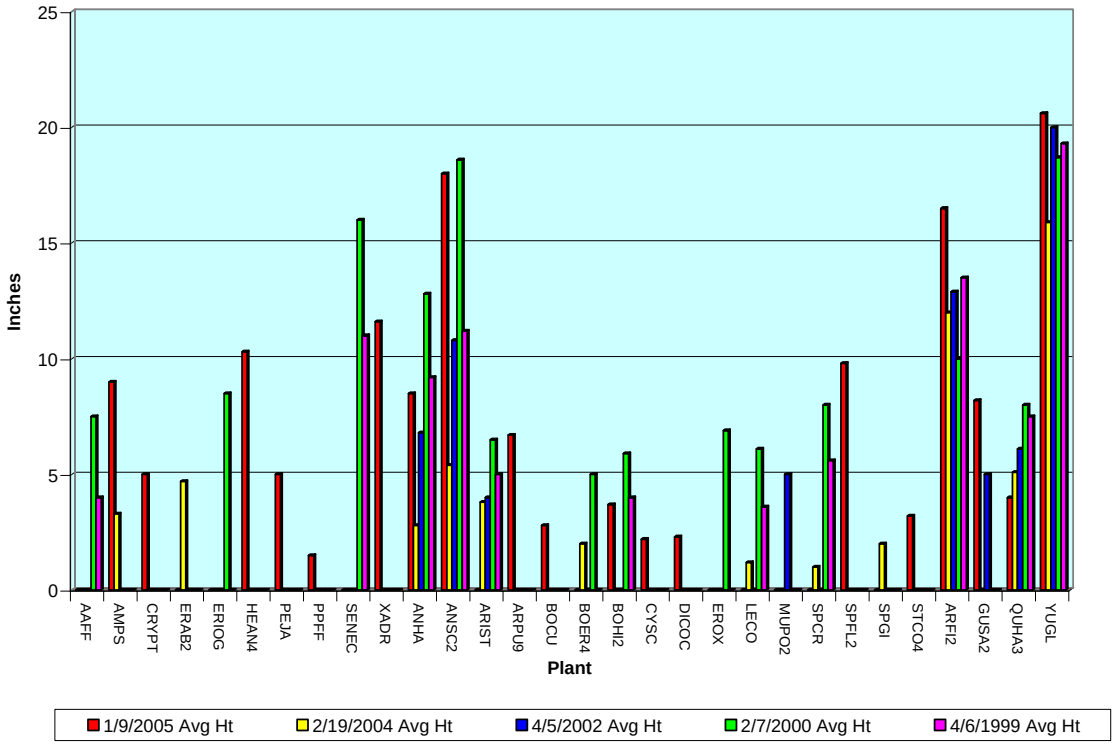
Robel Pole Summary over Time Report

Report Parameters
SITE NAME LIKE 65049-WEST SAND-D019
ON/AFTER 10/01/1998
ON/BEFORE 09/30/2005

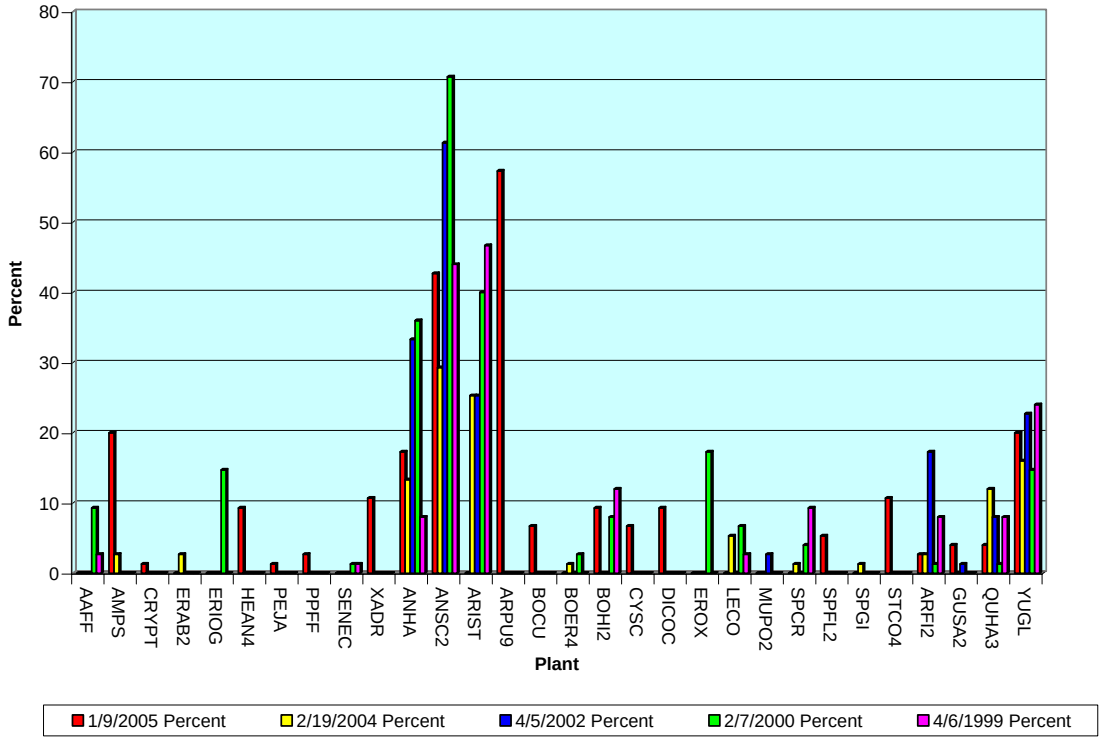
Primary Obstructions	**65049-WEST SAND-D019**	**65049-WEST SAND-D019**	**65049-WEST SAND-D019**	**65049-WEST SAND-D019**	**65049-WEST SAND-D019**
	01/09/2005	**02/19/2004**	**04/05/2002**	**02/07/2000**	**04/06/1999**
Flag Stations	11	1	4	35	6
	% Hits	% Hits	% Hits	% Hits	% Hits
BGROUND	50.7 %	54.7 %	76.0 %	38.7 %	56.0 %
LITTER	22.7 %	28.0 %	12.0 %	12.0 %	6.7 %
GUSA2	1.3 %	0.0 %	0.0 %	0.0 %	0.0 %
QUHA3	0.0 %	0.0 %	0.0 %	0.0 %	1.3 %
YUGL	1.3 %	1.3 %	0.0 %	1.3 %	2.7 %
ANHA	0.0 %	2.7 %	1.3 %	9.3 %	1.3 %
ANSC2	4.0 %	2.7 %	6.7 %	13.3 %	10.7 %
ARIST	0.0 %	8.0 %	4.0 %	13.3 %	4.0 %
ARPU9	6.7 %	0.0 %	0.0 %	0.0 %	0.0 %
BOCU	1.3 %	0.0 %	0.0 %	0.0 %	0.0 %
BOER4	0.0 %	1.3 %	0.0 %	1.3 %	0.0 %
BOGR2	0.0 %	0.0 %	0.0 %	0.0 %	5.3 %
BOHI2	0.0 %	0.0 %	0.0 %	6.7 %	0.0 %
CYSC	4.0 %	0.0 %	0.0 %	0.0 %	0.0 %
DICOC	4.0 %	0.0 %	0.0 %	0.0 %	0.0 %
EROX	0.0 %	0.0 %	0.0 %	2.7 %	0.0 %
LECO	0.0 %	1.3 %	0.0 %	1.3 %	2.7 %
MUSQ	1.3 %	0.0 %	0.0 %	0.0 %	0.0 %
SPCR	0.0 %	0.0 %	0.0 %	0.0 %	1.3 %
STCO4	1.3 %	0.0 %	0.0 %	0.0 %	0.0 %
AAFF	0.0 %	0.0 %	0.0 %	0.0 %	8.0 %
AMPS	1.3 %	0.0 %	0.0 %	0.0 %	0.0 %

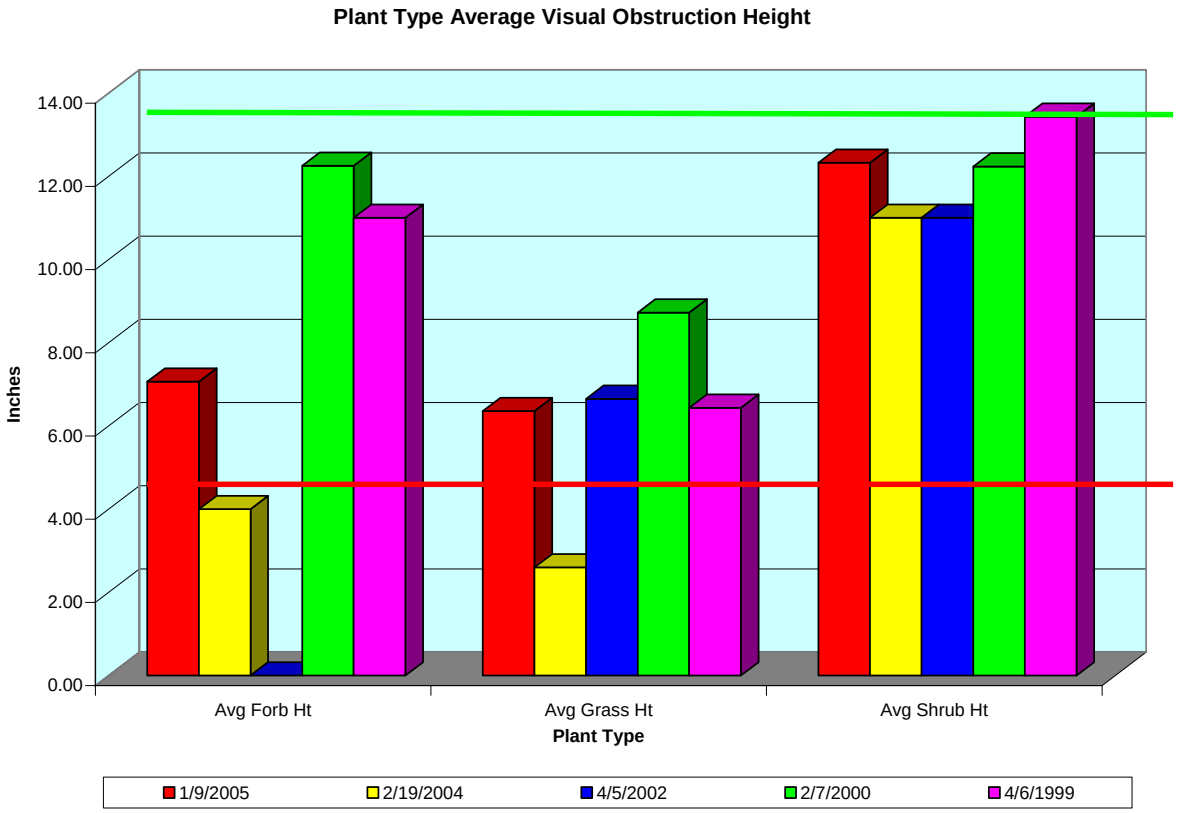
Secondary Obstructions	65049-WEST SAND-D019		65049-WEST SAND-D019		65049-WEST SAND-D019		65049-WEST SAND-D019		65049-WEST SAND-D019	
	01/09/2005		02/19/2004		04/05/2002		02/07/2000		04/06/1999	
	Percent	Avg Ht	Percent	Avg Ht	Percent	Avg Ht	Percent	Avg Ht	Percent	Avg Ht
AAFF	0.0	0.0	0.0	0.0	0.0	0.0	9.3	7.5	2.7	4.0
AMPS	20.0	9.0	2.7	3.3	0.0	0.0	0.0	0.0	0.0	0.0
ANHA	17.3	8.5	13.3	2.8	33.3	6.8	36.0	12.8	8.0	9.2
ANSC2	42.7	18.0	29.3	5.4	61.3	10.8	70.7	18.6	44.0	11.2
ARFI2	2.7	16.5	2.7	12.0	17.3	12.9	1.3	10.0	8.0	13.5
ARIST	0.0	0.0	25.3	3.8	25.3	4.0	40.0	6.5	46.7	5.0
ARPU9	57.3	6.7	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
BOCU	6.7	2.8	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
BOER4	0.0	0.0	1.3	2.0	0.0	0.0	2.7	5.0	0.0	0.0
BOHI2	9.3	3.7	0.0	0.0	0.0	0.0	8.0	5.9	12.0	4.0
CRYPT	1.3	5.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
CYSC	6.7	2.2	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
DICOC	9.3	2.3	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
ERAB2	0.0	0.0	2.7	4.7	0.0	0.0	0.0	0.0	0.0	0.0
ERIOG	0.0	0.0	0.0	0.0	0.0	0.0	14.7	8.5	0.0	0.0
EROX	0.0	0.0	0.0	0.0	0.0	0.0	17.3	6.9	0.0	0.0
GUSA2	4.0	8.2	0.0	0.0	1.3	5.0	0.0	0.0	0.0	0.0
HEAN4	9.3	10.3	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
LECO	0.0	0.0	5.3	1.2	0.0	0.0	6.7	6.1	2.7	3.6
MUPO2	0.0	0.0	0.0	0.0	2.7	5.0	0.0	0.0	0.0	0.0
PEJA	1.3	5.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
PPFF	2.7	1.5	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
QUHA3	4.0	4.0	12.0	5.1	8.0	6.1	1.3	8.0	8.0	7.5
SENEC	0.0	0.0	0.0	0.0	0.0	0.0	1.3	16.0	1.3	11.0
SPCR	0.0	0.0	1.3	1.0	0.0	0.0	4.0	8.0	9.3	5.6
SPFL2	5.3	9.8	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
SPGI	0.0	0.0	1.3	2.0	0.0	0.0	0.0	0.0	0.0	0.0
STCO4	10.7	3.2	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
XADR	10.7	11.6	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
YUGL	20.0	20.6	16.0	15.9	22.7	20.0	14.7	18.7	24.0	19.3

Average Visual Obstruction Height



Plant Composition




Plant Type Average Visual Obstruction Height
14.00
12.00
10.00
8.00
6.00
4.00
2.00
0.00
Inches
Avg Forb Ht
Avg Grass Ht
Avg Shrub Ht
Plant Type
1/9/2005
2/19/2004
4/5/2002
2/7/2000
4/6/1999